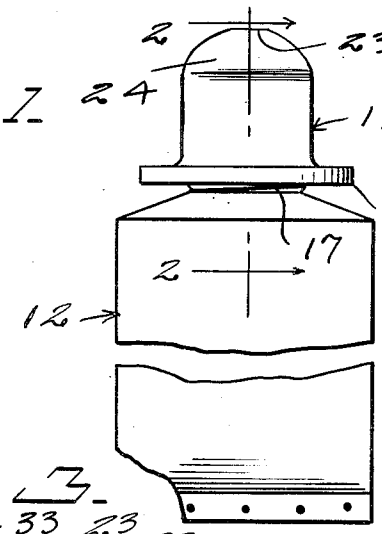
June 20, 1950 C. N. BOHANAN 2,512,412

SELF-SEALING DISPENSING CAP AND CLOSURE FOR CONTAINERS

Filed Sept. 5, 1946

Fig. 1.



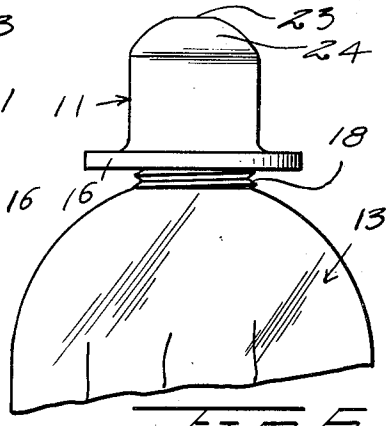


Fig. 6.

Fig. 3.

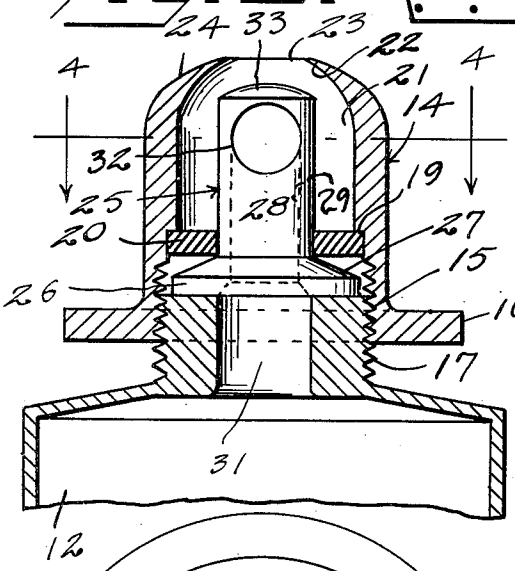
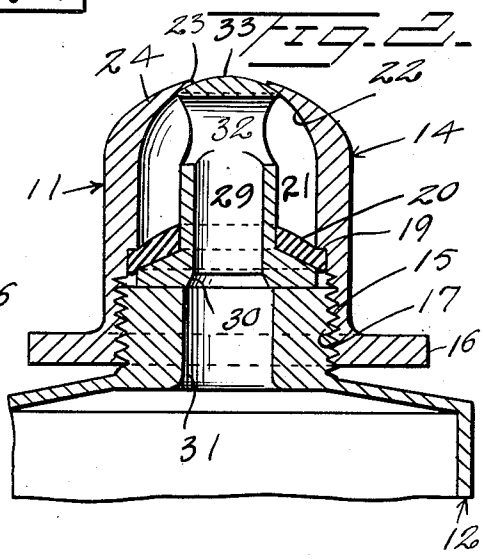


Fig. 2.



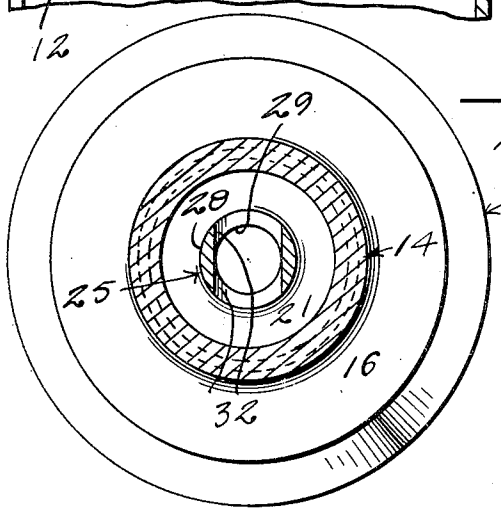


Fig. 4.

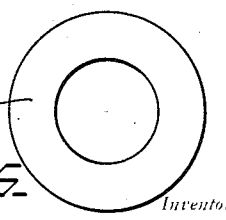


Fig. 5.

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Patented June 20, 1950

2,512,412

UNITED STATES PATENT OFFICE

2,512,412

SELF-SEALING DISPENSING CAP AND CLOSURE FOR CONTAINERS

Collonus N. Bohanan, Oak Park, Ill.

Application September 5, 1946, Serial No. 694,887

2 Claims. (Cl. 222—521)

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This invention relates to a novel construction of closure for use with containers and which is especially constructed and arranged to permit dispensing of the contents of a container without complete removal of the closure to thus afford a closure which is normally non-detachable, thus eliminating the likelihood of loss of the closure.

More particularly, it is an object of the invention to provide a closure for the aforedescribed purpose which may be readily turned for either positioning the closure to provide a dispensing outlet for the container to which it is applied or for sealing the outlet thereof.

A further object of the invention is to provide a closure of the above described character which is so constructed that it may be readily maintained in a sanitary condition and which will effectively function to substantially eliminate waste of the contents of the container to which it is connected.

Various other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the drawings, illustrating preferred embodiments thereof, and wherein:

Figure 1 is a side elevational view of one embodiment of the self-sealing cap closure and illustrated as applied to a collapsible paste dispensing tube;

Figure 2 is an enlarged longitudinal sectional view taken substantially along a plane as indicated by the line 2—2 of Figure 1, and showing the closure in a closed position;

Figure 3 is a similar view, but showing the cap closure in an open, dispensing position;

Figure 4 is a cross sectional view taken substantially along a plane as indicated by the line 4—4 of Figure 3;

Figure 5 is a plan view of one element of the closure and

Figure 6 is a view similar to Figure 1, but showing the closure applied to a rigid container, such as a bottle or jar.

Referring more specifically to the drawing, the improved self-sealing cap closure is designated generally 11 and is illustrated in Figures 1 to 4 as applied to a conventional collapsible dispensing tube of the type generally employed for containing and dispensing such items as tooth paste and shaving cream, designated generally 12; and in Figure 6, the cap closure 11 is illustrated as applied to a bottle or jar, designated generally 13 of the type generally employed preferably to contain a liquid, as for example a shaving lotion, but which may also be of the type employed for containing a powdered or granulated material, as for example talcum powder or tooth powder.

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The self-sealing cap closure 11 includes a cap, designated generally 14 having an enlarged internally threaded end 15, preferably provided with an outwardly extending flange 16. The internally threaded open end 15 is adapted to engage the externally threaded neck 17 of the tube 12, or the externally threaded neck 18 of the bottle, jar or other rigid container 13. The cap 14 inwardly of its threaded portion 15, is provided with an outwardly facing annular shoulder 19, forming a seat for a resilient washer 20 which is disposed therebeneath. Inwardly or above the washer 20, the cap 14 is provided with a hollow interior forming a chamber 21, the outer or upper end of which is restricted by a concave upper portion 22 which communicates with a restricted opening 23 in the outer or upper end of the cap 14. Externally, the cap 14 is provided at its upper end with a convex portion 24 which tapers in thickness toward the opening 23, so that the wall of the cap, defining said opening, as seen in Figures 2 and 3, is tapered to substantially a feather edge, for a purpose which will hereinafter become apparent.

The closure 11 also includes a supplementary dispensing neck 25 having an enlarged base, designated generally 26, the underside of which is substantially flat to abut flush against the outer end of the neck 17 or similarly against the outer end of the neck 18. The base 26 is provided on its inner or upper side with a frustro-conical portion 27 which joins with the lower or inner end of the circular neck portion 28 which is of a diameter only slightly less than the diameter of the opening of the washer 20 which is disposed thereon and at the base thereof and adjacent the frustro-conical portion 27. The supplementary neck 25 is provided with a longitudinal bore 29 which extends through a substantial portion of its neck portion 28 and into the base 26 and which is provided with an annularly flared end 30, formed in the base 26 and which registers with the bore 31 of the tube neck 17, and which is of substantially the same diameter as the bore 31, at its enlarged end. The neck portion 28 is provided with a diametrically extending bore 32 adjacent its upper end of substantially the same diameter as the bore portion 29 and into which said bore portion opens. The outer end of the neck 28 terminates in a convex head 33 which substantially conforms to the curvature of the

cap portion 24 and which substantially forms a continuation thereof, when the head 33 is disposed to close the opening 23, as illustrated in Figure 2.

From the foregoing it will be readily apparent that when the closure 11 is in its position of Figure 2, the contents of the tube 12 or container 13 will be effectively sealed by the engagement of the head 33 with the internal concave wall 22 which surrounds the opening 23. When so disposed, the washer 20 is distorted by the downward displacement of the shoulder 19 so that its underside bears substantially flush against the frustro-conical surface 27. When it is desired to dispense the contents of the tube 12 or container 13, the cap 14 is unscrewed sufficiently to move the opening 23 out of engagement with the head 33 and into communication with the chamber 21, as seen in Figure 3. As the cap 14 is thus unscrewed, it will move relatively to the neck 25, due to the fact that the resilient washer 20 will return toward a normal position, as illustrated in Figure 3, from its distorted position of Figure 2, and in its position of Figure 3 it will still bear against the frustro-conical portion 27 to retain the base 26 in flush engagement with the outer end of the container neck. By squeezing the collapsible container 12 or inverting the rigid container 13, a portion of the contents thereof will pass outwardly through the bore of the container neck and into the bore 29 through the bore portion 30 and from the bore 29 into the diametrically disposed bore 32 to be dispensed radially therefrom in opposite directions into the chamber 21. During this operation, the neck 25 will be prevented from being displaced from engagement with the end of the container neck, by the pressure of the washer 20 and to further insure this function, the cap 14 need not be unscrewed to the extent as illustrated in Figure 3, in order to permit dispensing of the container contents. The contents after entering the chamber 21 is dispensed through the opening 23 either by extrusion, if in the form of a cream or paste, or by gravity, if in powdered or liquid form. After the desired amount of the contents have been dispensed, the cap 14 is returned to its position of Figure 2, and it will be readily apparent that the exposed part of the head 23 and the surrounding edge portion of the opening 23 may be readily cleaned to remove any portion of the contents remaining on said parts to effectively retain the closure 11 in a sanitary condition.

Various other modifications and changes are likewise contemplated and may obviously be resorted to, without departing from the spirit and scope of the invention as hereinafter defined by the appended claims.

I claim:

1. In a self-sealing dispensing cap and closure for collapsible tubes or rigid containers having an externally threaded discharge neck, a cap having an internally threaded end adapted to detachably and adjustably engage a threaded container neck, said cap being provided with a chamber disposed above its threaded portion and having a restricted outlet in the end of the cap remote to said threaded end, a supplementary neck projecting from the outer end of the container neck and having a longitudinal bore registering with the bore of the container neck, said supplementary neck having a radially projecting outwardly opening bore communicating with its first mentioned bore and opening outwardly into the cap chamber, and said supplementary neck having a head at its outer end shaped to seat against a portion of the cap to close and seal the restricted outlet of the cap, said supplementary neck having an enlarged base provided with an outer side adapted to bear flush against the outer end of the container neck, and an inner, substantially frusto-conical side, said cap being provided with an internal shoulder facing toward its threaded end, and a resilient washer disposed in said cap in engagement with said supplementary neck and having a portion of one side thereof bearing against said shoulder, said washer being deformable into a position in engagement with said frusto-conical base portion when the cap is in a retracted, closed position, and said washer yieldably bearing against the base, when the cap is in an opened position, for retaining said base in engagement with the container neck and to retain the head of the supplementary neck out of engagement with said restricted outlet.

2. In a self-sealing dispensing cap and closure for collapsible tubes or rigid containers having an externally threaded discharge neck, a cap having an internally threaded end adapted to detachably and adjustably engage a threaded container neck, said cap being provided with a chamber disposed above its threaded portion and having a restricted outlet in the end of the cap remote to said threaded end, a supplementary neck projecting from the outer end of the container neck and having a longitudinal bore registering with the bore of the container neck, said supplementary neck having a radially projecting outwardly opening bore communicating with its first mentioned bore and opening outwardly into the cap chamber, and said supplementary neck having a head at its outer end shaped to seat against a portion of the cap to close and seal the restricted outlet of the cap, said supplementary neck having an enlarged base provided with an outer side adapted to bear flush against the outer end of the container neck and having an inner side facing in the opposite direction, said cap having an internal shoulder facing toward its threaded end, and a resilient washer disposed in said cap in engagement with said supplementary neck and having a portion of one side thereof bearing against said internal shoulder and a portion of its opposite side bearing against said inner side of the base of the supplementary neck, said washer being clamped between the shoulder and the base of the supplementary neck when the cap is in a retracted, closed position, and said washer yieldably bearing against the base for retaining the base in engagement with the container neck and to retain the head of the supplementary neck out of engagement with said restricted outlet when the cap is in an extended, open position.

COLLONUS N. BOHANAN.

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